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KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATURAL SCIENCES GRADE 8
TERM 2 TOPIC TEST NO. 3
Topic: Particle Model of Matter
Marks: 32 **Time:** 32 minutes

Question 1

1.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A - D) next to the question number (1.1.1 1.1.2) in the ANSWER BOOK, e.g. 1.1.6 A

1.1.1 Study the picture below of a man blowing a balloon and answer the question below.



What causes the balloon to inflate?

A. It is the force applied on a particular area.
B. Applied force on the balloon.
C. Force applied by gas particles per unit volume.
D. Force applied by his hand on the balloon. (1)

1.1.2 When a metal gets bigger when heated, it is referred to as?

A. Density
B. Expansion
C. Pressure
D. Contraction (1)

1.1.3 Study the table below and answer the following question.

Substance	Melting point	Boiling point
A	-10 °C	30 °C

At what phase will **SUBSTANCE A** be in room temperature (25°C)

A. Gas
B. Liquid
C. Solid
D. None of the above (1)

[3]

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Question 2

Lungile and Themba are smart grade 8 learners. They set up an investigation to find out how fast liquids mix. They used the following materials and methods.

Materials and Apparatus used

Food colouring, 3 droppers, 3 beakers and a stopwatch.

Beaker A	50 ml of Ice water
Beaker B	50 ml of room temperature water
Beaker C	50 ml of Hot water

The learners carefully Place one drop of food colouring **simultaneously** in each of the three beakers, and measured the time taken for the food colouring to completely mix with water.

Liquid	**Time it took to mix completely (s)**
Beaker **A**: Ice water	73
Beaker **B**: Tap water at room temperature	58
Beaker **C**: Hot water	45

Using the table of results above answer the following questions.

2.1 Which liquid took less time to mix the food colouring completely? (1)

2.2 Formulate a suitable hypothesis for this investigation. (2)

2.3 Write down two controlled variables for this investigation. (2)

2.4 Describe what happens when the drop of food colouring enters the water. (1)

2.5 What conclusion can be drawn from Lungile and Themba's results? (2)

2.6 Mention any two ways in which Lungile and Themba can do to ensure the reliability of their results. (2)

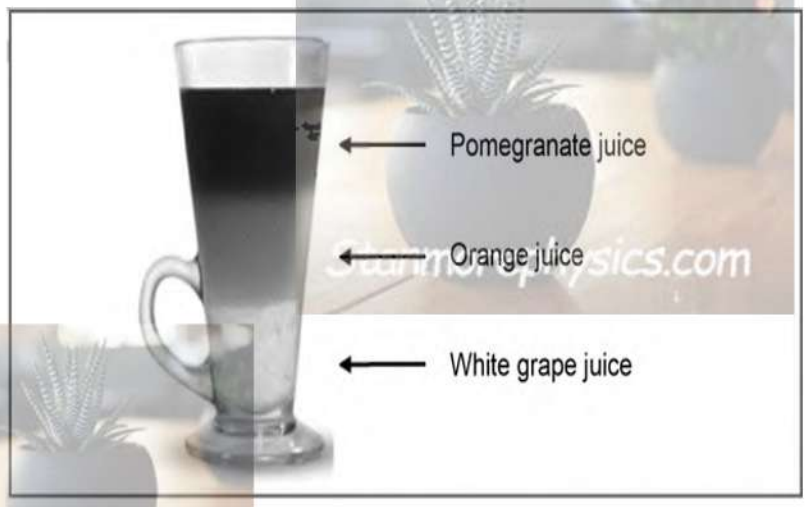
2.7 Draw a bar graph of liquid (y-axis) vs time (x-axis) to show the results obtained. (4)

(14)

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Question 3

3.1 Siyanda orders a drink in a restaurant. When the waiter brought his drink, he noticed that he could see three different layers of liquids, as shown in the diagram below. Study the diagram and answer the questions that follow.



3.1.1 Define the term density (2)

3.1.2 Which one of the three layers has the highest density (1)

3.1.3 Will the density of matter INCREASE or DECREASE when it is heated? Explain your answer by referring to the definition of density. (2)

3.2 A cube of ice is added to a class of water. The following information about water and the cube of ice Is available.

	Volume in cm^3	Mass in g
Ice cube	70,0	64,2
Liquid water	64,2	64,2

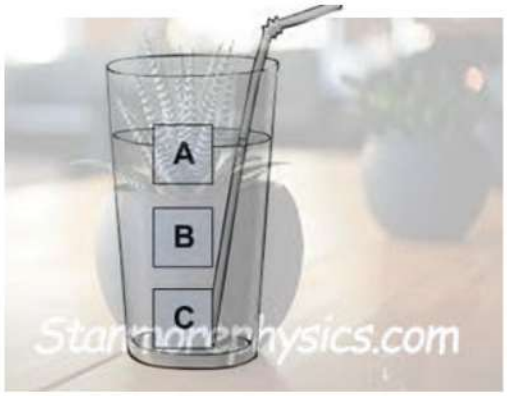
3.2.1 Calculate the density of liquid water using the following formula

Density = mass/volume

N.B: your answer should be in g/cm^3. (3)

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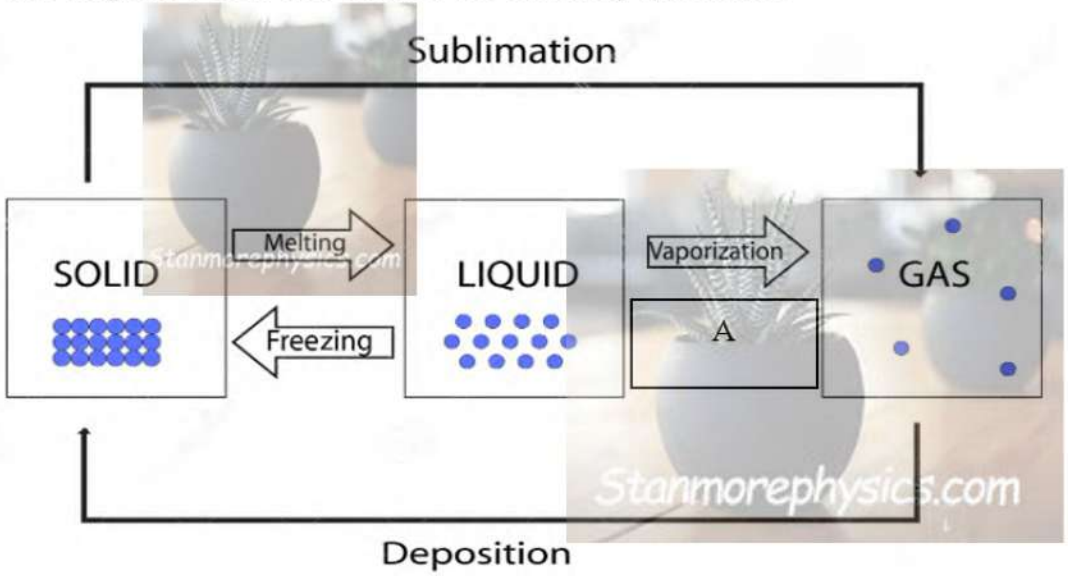
3.2.2 Where within the glass of water would you expect to find the ice cube?



(1)

3.2.3 Explain your answer to question 3.2.2. (2)

3.3 Study the diagram below and answer the following questions.



3.3.1 Write down the process represented by letter A in the diagram above. (1)

3.3.2 Explain the change in the arrangement of particles during melting. Your answer should be based on the strength of the force of attraction and kinetic energy. (3)

(15)

Total Marks: 32

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KWAZULU-NATAL PROVINCE
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NATURAL SCIENCES GRADE 8
TERM 2 TOPIC TEST NO. 3 MEMORANDUM
Topic: Particle Model of Matter
Marks: 32 **Time:** 32 minutes

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Question 1

1.1

1.1.1 C✓ (1)

1.1.2 B ✓ (1)

1.1.3 B✓ (1)

(3)

Question 2

2.1 Liquid in beaker C✓ (1)

2.2 Mix hot liquid food colouring faster.✓✓ (2)

2.3 Volume of liquid ✓ and amount of food colouring ✓ (2)

2.4 Food colouring will dissolve in water. ✓ (1)

2.5 Hot Liquid dissolves faster than ice water. ✓✓ (2)

2.6 Repeat the investigation more than once. ✓
Make sure that the volume of water and amount of food colouring are controlled. ✓ (2)

2.7 Criteria:

- Both axes labelled ✓ (4)
- Bar graph drawn ✓
- Correct plotting.✓✓

(14)

Question 3

3.1

3.1.1 Mass per unit volume. ✓✓ (2)

3.1.2 White grape juice ✓ (1)

3.1.3 DECREASE✓
The volume of the substance will change while the mass remains the same. ✓ (2)

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3.2

3.2.1 Density= mass/volume

=64,2✓ /64,2✓

= 1 g/cm^3✓ (3)

3.2.2 A✓ (1)

3.2.3 Ice cubes float because of their molecular structure✓✓. (2)

3.3

3.3.1 Condensation ✓ (1)

3.3.2 During melting the solid substance changes liquid ✓, force of attraction becomes weak ✓, and the kinetic energy of particles increases✓. (3)

(15)

Total Marks: 32

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